

WHAT IS CLAIMED IS:

1. A method for extracting a watermark signal contained in a watermarked digital image sequence, having two or more frames, comprising the steps of:

- a) estimating correspondences between one or more pairs of frames in the watermarked digital image sequence;
- b) computing a displaced frame difference for one or more frames in the watermarked digital image sequence using the correspondences computed in step a); and
- c) extracting the watermark signal from one or more displaced frame differences.

2. The method claimed in claim 1, wherein the displaced frame difference is computed by forming an estimated frame and subtracting the estimated frame from the corresponding frame in the watermarked digital image sequence.

3. The method claimed in claim 1, wherein the correspondences are estimated using gradient-based optical flow.

4. The method claimed in claim 1, wherein the correspondences are estimated using block-based matching.

5. The method claimed in claim 1, wherein the correspondences are estimated using layered motion estimation.

6. The method claimed in claim 1, wherein the correspondences are estimated using a parametric region-based motion estimation.

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7. The method claimed in claim 1, wherein the watermarked digital image sequence has been compressed to form a compressed image stream and at least a portion of the correspondences are estimated from motion vectors available in the compressed image stream.

8. The method claimed in claim 1, wherein displaced frame difference for each frame is computed using the correspondences with one additional frame in the watermarked digital image sequence.

9. The method claimed in claim 1, wherein displaced frame difference for each frame is computed using the correspondences with two or more additional frames in the watermarked digital image sequence.

10. A system for extracting a watermark signal contained in a watermarked digital image sequence, having two or more frames, comprising:

- a) means for estimating correspondences between one or more pairs of frames in the watermarked digital image sequence;
- b) means for computing a displaced frame difference for one or more frames in the watermarked digital image sequence using the correspondences computed in step a); and
- c) means extracting the watermark signal from one or more displaced frame differences.

11. The method claimed in claim 10, wherein the means for computing the displaced frame difference further includes means for forming an estimated frame and means for subtracting the estimated frame from the corresponding frame in the watermarked digital image sequence.

12. The system claimed in claim 10, wherein the means for estimating correspondences employs gradient-based optical flow.

13. The system claimed in claim 10, wherein the means for estimating correspondences employs block-based matching.

14. The system claimed in claim 10, wherein the means for estimating correspondences employs layered motion estimation.

15. The system claimed in claim 10, wherein the means for estimating correspondences employs parametric region-based motion estimation.

16. The system claimed in claim 10, wherein the watermarked digital image sequence has been compressed to form a compressed image stream and the means for estimating correspondences employs at least a portion of the motion vectors available in the compressed image stream.

17. The system claimed in claim 10, wherein the means for computing the displaced frame difference for each frame employs correspondences with one additional frame in the watermarked digital image sequence.

18. The system claimed in claim 10, wherein the means for computing the displaced frame difference for each frame employs correspondences with two or more additional frames in the watermarked digital image sequence.